MARINE REVIEW.

VOL. VII. CLEVELAND, O., AND CHICAGO, ILL., JUNE 22, 1893. No. 25.

Four More Passenger Steamers.

Since the recent visit of President James J. Hill of the Great Northern Railway to the yards of the Globe Iron Works Company in Cleveland, where the two big twin-screw passenger steamers are building for his line, it has been definitely decided to build four more steamers of the type now under construction. The new boats will, in fact, represent an advance over Mr. Hill's big undertaking in putting on the lakes two passenger boats that will cost $600,000 each and develop 7,000 horse power each, as they will be 410 feet long, or 30 feet longer than the boats now building. Work on the first of them will probably not be started until one of the steamers to come out next season is given a trial. With a fleet of six passenger boats of this kind, equal to the number of freight steamers now owned by the Northern Steamship Company, arrangements can be made to have a passenger boat leave Buffalo almost daily for the head of Lake Superior. There is evidently some big scheme for the control of transcontinental passenger traffic in the building of these boats that has not as yet been fully given out.

Canadian Canal Tolls.

There is no foundation for the claim that the Canadian government is refunding the Welland canal toll of 10 cents a ton on grain bound to Montreal by way of Kingston, and the newspaper articles on the subject have evidently been written without a full investigation of the facts. It will be remembered that in settlement of the controversy over canal tolls between the dominion and the United States, the Canadian government issued, before the opening of navigation this season, an order establishing a uniform charge of 10 cents a ton on all grain bound through the Welland, whether destined for Canadian ports or ports of the United States. Since this order went into effect, many vessels of both Canada and the United States have had the canal charges refunded to them upon delivering at Kingston grain cargoes bound from Chicago to Montreal, but in all cases the money has been returned to the vessels on a stipulation in the charter made in Chicago before the grain was taken aboard. Whether this expense is borne by the shipper of the grain or the forwarding company at Montreal is not material, but it is not difficult to understand how the owners of the grain or the forwarders can this season afford to pay the rebate that was in previous years borne by the dominion government. Since the opening of the present season, the railways interested in carrying grain from Buffalo to the seaboard have, by agreement, maintained high rates of freight, and Erie canal rates have been proportionately high. This has diverted traffic to the competing St. Lawrence route, and the difference in freight charges east of Buffalo have been so much higher than last season that the St. Lawrence interests could well afford to bear the canal expenses, as they have been doing. It is not at all probable that the Canadian government has any hand in the matter.

A Very Big Freight Boat.

As had been expected, the steel steamer S. S. Curry, the largest freight boat now afloat on the lakes, has proven herself an immense carrier, having delivered at Fairport on Monday last a cargo of 3,852 gross or 4,314 net tons of ore from Escanaba on a draft of 16 feet 3 inches. This boat, built by F. W. Wheeler & Co. of West Bay City for the Hawgood and Avery Transit Company of Cleveland, has engines and boilers amidships, and on this account there was considerable interest in the question of her adaptability to iron ore chutes and hoists for handling cargo, but in this respect also she is a great success, as only six hours were spent in loading, and the big cargo was removed in thirteen hours, actual working time. In unloading the vessel, nine of her ten working hatches were used, and when in removing ore from the hatch nearest the bow, it became necessary to lower the steamer to secure good service from a McMyler hoist, she was readily sunk four feet by pumping water into her forward compartments. It is not probable that another cargo of this size will be handled as readily by any boat during the present season, as the Curry now goes into the Lake Superior trade. This cargo, although 200 tons larger than any load previously brought down the lakes, is of course not as large as that taken by the steamer Maritana from Escanaba to South Chicago. The Maritana was loaded to 17½ feet, and took from Escanaba to South Chicago 4,260 gross tons, or 402 tons more than the Curry delivered at Fairport. What the Curry would do on Lake Michigan, where her draft would be practically unlimited, can only be surmised until such time as she may find occasion to enter that trade.

Hill's Railway.

At the banquet given in his honor at St. Paul a short time ago, James J. Hill, president of the Great Northern Railway and Northern Steamship Company, said: "In the year ending June 30, 1879, when we took possession of the road, it carried 2,183,000 bushels of wheat; of the crop of 1891 we carried 57,000,000 bushels, over one-third of the spring wheat raised in the United States and 10 per cent. of all the wheat raised in the United States. While our Chicago friends may get hold of some of this wheat when it has hoops 'round it, we carried more wheat than all the roads carried into Chicago of that crop, and we carried as many bushels of wheat into Superior and Duluth as all the roads carried into Chicago of that crop. Now that speaks for itself. A new area of country has been put in cultivation—the Red river valley. Twenty years ago it was not possible to take a team through the Red river valley. Today the Red river valley for productiveness has no equal on this continent. But to return to a few figures to which I want to call your attention. During the fourteen years ending on the 23d of this month our pay roll—the money we paid out to the men who earned it—has amounted to $79,000,000; and the reduction in the company's revenue due to the reduction in transportation rates has amounted to over $67,000,000. Now the public has had some of these advantages. The share-holders, the people behind the enterprise, have had between $15,000,000 and $16,000,000 in dividends on their invested capital. If they have had more than their share, we must ask those who have done so well from the increase in the value of their land to be patient with us, and with a little generosity on their part we will try to make the account even."

The keel for the first of the American line steamships is the 277th keel laid by the Cramps.

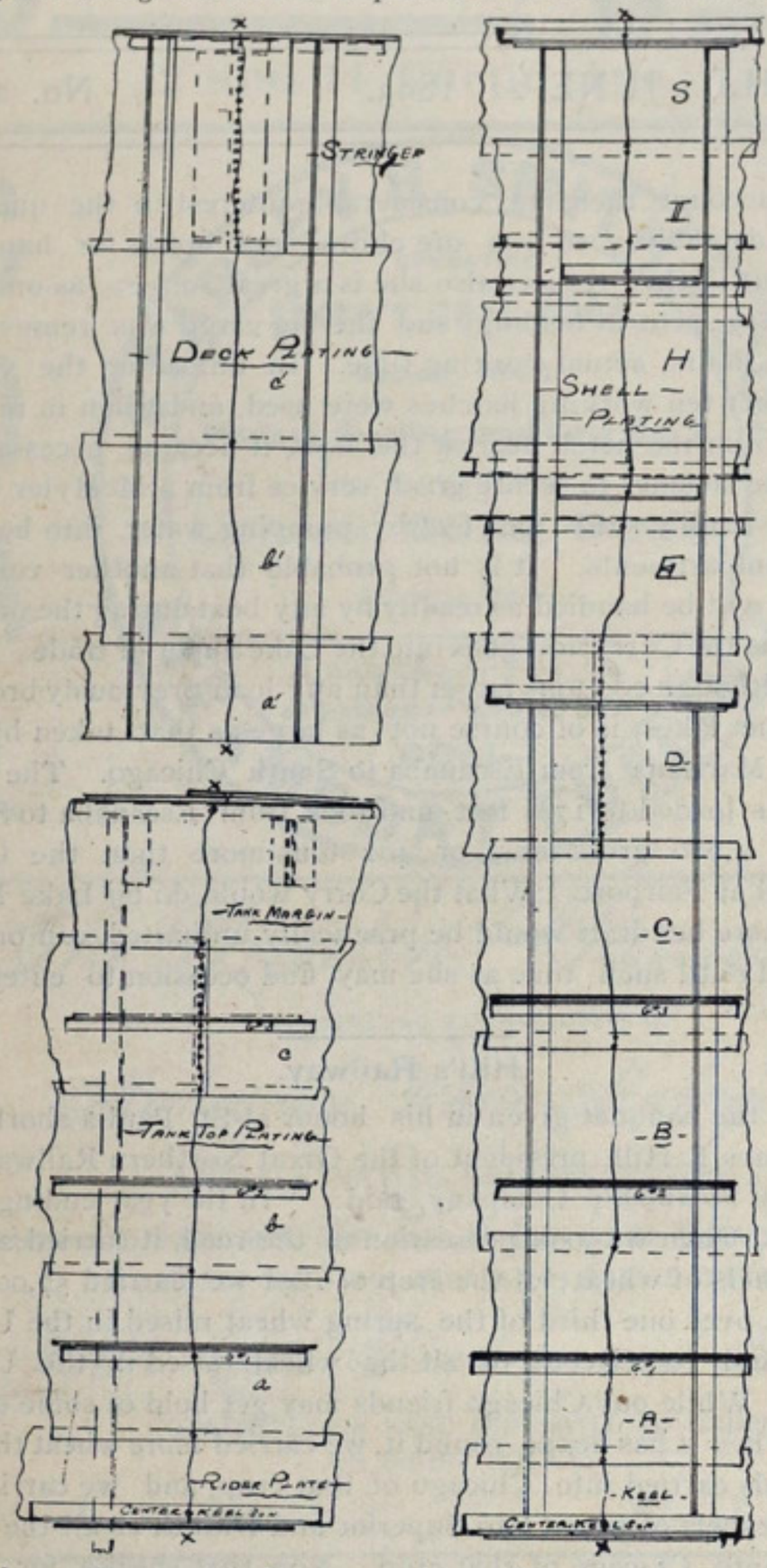
Steel plates measuring 60 feet in length, 50 inches in width and 11-20th of an inch in thickness are now being made for large ships in England.

An order has just been issued by the British admiralty for a battle ship 390 feet long and 75 feet extreme breadth, the largest vessel of her kind in the world.

Steel Ship Construction.—Part 2.

STRONGEST SECTION OF METAL VESSELS.

The space between the frames shown by fracture X is the strongest part of a vessel, there being no rivet holes required between frames for frame riveting,



which leaves the material whole, or nearly so. The following table will show the reduction of metal in this space caused by punching:

DEDUCTION FOR PUNCHING OUT RIVET HOLES.

PARTS OF THE STRUCTURE.	No. of rivet holes.	Size of rivet holes.	Thickness of plate.	Square inches.
Keel plate	3	¾ inch	¾ inch	1.687
A strake, shell plating	4	¾ "	1/2 "	1.350
B " "	4	¾ "	7/16 "	1.312
C " "	4	¾ "	7/16 "	1.312
D " "	20	¾ "	1/2 "	7 500
E " "	7	¾ "	7/16 "	1.515
H " "	4	¾ "	7/16 "	1.312
I " "	7	¾ "	1/2 "	2.625
S " "	3	¾ "	¾ "	1.625
Center keelson, including angles	10	¾ "	¾ "	2.812
Girders, including angles	15	¾ "	15/16 "	3.360
Side stringers, including angles	16	¾ "	15/16 "	4.500
Rider plate, tank top	2	¾ "	¾ "	.562
a strake, "	3	⅝ "	15/16 "	.580
b " "	3	⅝ "	15/16 "	.580
c " "	15	⅝ "	15/16 "	2.930
Margin plate and angle, tank top	4	¾ "	¾ "	1.125
Deck stringer plate, including angle	22	¾ "	¾ "	8.250
a' strake, deck plating	1	⅝ "	¾ "	.155
b' " "	2	⅝ "	¾ "	.310
c' " "	2	⅝ "	¾ "	.310
Fender angles	4	⅞ "	¾ "	1.125
	155			46 937
	2			2
Total number of holes	310	Total square inches		93.874

In the last article (Vol. 7, No. 20) there are *931.11 square inches for the unpunched material, and with a deduction of 93.874 square inches for rivet holes in this mode of fracture there is left 837.236 square inch s, being 41.0 6 square inches or 1,232.28 tons stronger than at unavoidable weakest section. An addition of 26 square inches for deck stringer strap (double) and 16.5 square inches for side stringer and angle between frame space will make an increase of 2,507.28 tons over the line of rivet holes connecting frame to shell plating. It matters not in this case if the strakes of plating be lapped at butts or strapped, seeing that a further reduction in the area of the section could be made without weakening the vessel in any way.

*An error was made in figures contained in the last article (Vol. VII, No. 20). The unpunched material should read 931.11 and the punched material 796.16 square inches.

Plans for Submarine Boats.

The call of the navy department for designs for a submarine torpedo boat will probably be answered by two inventors from the lakes. George C. Baker of Chicago and Capt. Alex. McDougall. Although Capt. McDougall's war vessels, which will be described in the series of articles on his patents now being published in the REVIEW, are not in accordance with the instructions sent out in the call for designs made by the navy department for designs, they embody his ideas of a submarine coast defense vessel, and he can probably suit these ideas to a torpedo boat. Mr. Baker's plans will be in accordance with the boat built for him some time ago by the Detroit Boat Works and described at length in several articles that have already appeared in the REVIEW. A great deal of confidence has been placed by experts in the Baker boat.

The French have taken the lead in submarine navigation, having built several vessels of late, one of which, the Gymnote, has been officially announced to be quite successful. Her propelling power is electricity, and compressed air is carried to furnish her crew with a respirable atmosphere. This vessel has remained below water forty minutes at a time, and during her early trials maintained a steady course, eight metres below the surface, for a distance of about 500 metres, at a speed of four knots. She is now regularly attached to the French navy. Another French boat, the Gustave Zede, is 131 feet long, displaces 250 tons, and is to develop a speed of 14 knots. A remarkable efficient boat has been built for the Spanish government upon the designs of Lieut. Peral of the Spanish navy, after whom she was named. Like the Gymnote and Gustave Zede, the Peral is cigar shaped, and is 72 feet long, 9½ feet in diameter at the thickest part and of 86 tons displacement. She is propelled by electricity and can make six knots when submerged, and eleven knots on the surface of the water. She has been thoroughly experimented with, with gratifying results, being easily manœuvred and perfectly controllable. Italy and Russia are also experimenting with boats of this kind.

A recent report from the navy department says that the importance of the problem of submarine boats is not easily overestimated, when its application to coast defence is considered. There is thus far absolutely no recognized means of efficient defence against sub-aquatic attacks on worships, and the effectiveness with which boats, supplied with high explosive torpedoes, manœuvreing beneath the hull of an armor-clad, may carry out their mission of destruction, is increased by the immunity they would enjoy from damage to themselves. No gun can hurt them beneath the water, no vessel can successfully ram them, they cannot be captured and the secrecy and stealth with which their operations may be carried on more than compensates them for the fault of slow speed from which they now suffer, but a fault likely to be eliminated as the type is developed.

Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on June 17, 1893:

	Wheat, bu.	Corn, bu.
Chicago	19,602,000	2,033,000
Duluth	9,012,000	.....
Milwaukee	1,490,000	10,000
Detroit	1,219,000	18,000
Toledo	2,289,000	144,000
Buffalo	2,143,000	332,000
Total	35,755,000	2,537,000

At the points named there is a net decrease for the week of 4,902,000 bushels of wheat and 305,000 bushels of corn.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company	$100 00	$.....	$.....
Champion Iron Company	25 00	26 00	.....
Chandler Iron Company	25 00	.....	40 00
Jackson Iron Company	25 00	.....	75 00
Lake Superior Iron Company	25 00	26 00	.....
Minnesota Iron Company	100 00	.....	60 00
Pittsburgh & Lake Angeline Iron Co	25 00	.....	140 00
Republic Iron Company	25 00	.....	9 25
Ashland	25 00	.....	.....
Section Thirty-three	25 00	1 00	.....
Brotherton	25 00	2 00	2 50
Iron Belt	25 00	2 40	2 75
Aurora	25 00	6 50	7 00

With great loss from forest fires in the new Missabe range towns, there is every indication of a still further reduction in the output of ore from the range, while the big Norrie mine on the Gogebic is threatened with a restriction in its output on account of an epidemic of typhoid at Ironwood. At the Colby and other mines of the Wisconsin Central syndicate on the Gogebic range there are no indications of work being resumed, and on the whole the leading mines of the entire Lake Superior region seem to be doing little more than some properties that have already been closed. Reports from the Missabe say that the Biwabik and Canton mines, the latter owned by the Minnesota company, have loaded some ore into cars, but all of these new properties are, in the matter of developement, very much behind what was expected of them by even the most conservative mine owners. The Merritt-Rockefeller syndicate has advanced money for the development of another property, the McKinley, and will rush work on extensions from their railway to the mine.

Mr. W. D. Rees, now the ruling spirit in the Lake Superior Iron Company, says his company will ship no unsold ore this year. Large stocks of last year's unsold product were carried over this spring. Although the Lake Superior probably ranks next to the Minnesota among the most important properties in the Lake Superior region, no dividends need be expected by stockholders, as the company is bearing, with the smaller concerns, its share of the drawbacks caused by the depression in business.

S. L. Botsford, president of the Mahoning Valley Iron Company, and L. E. Cochran of the Andrews Bros. Furnace Company have been in Duluth negotiating for mineral lands. They were accompanied on a visit to the Missabe by W. C. Agnew, mining expert. Duluth newspapers report that these gentlemen with Frank Hitchcock of Andrews, Hichcock & Co. will organize a mining company for the developement of lands, upon which they have secured an option.

Ferdinand Schlesinger has purchased from Ishpeming parties a property known as the Lucky Star and located just west of the Prince of Wales mine, Negaunee. Drill work on the property showed a body of hematite possessing a thickness of about 40 feet. It is supposed to be a continuation of the Buffalo deposit.

The Penn Iron Company, Menominee range, has shipped about 120,000 tons of ore to date. The Commonwealth company which is also working large territory on the same range, is moving 1,200 to 1,500 tons daily, but the ore is all from the mines, the stock piles remaining undisturbed.

The report of the inaugural meeting of the Lake Superior Mining Institute, held at Ironwood in March last, is a neat and valuable pamphlet, which reflects credit upon Secretary E. W. Denton of Houghton, Mich.

The steambarge S. C. Clark burned off Port Sanilac, Wednesday. The Desmond picked up the charred hull and towed it to Port Huron. The Clark was owned by J. W. Squires, Marine City, valued at $15,000 and insured for $11,000. She is a total loss.

The Columbus fleet, the Santa Maria, Pinta and Nina, arrived at Ogdensburg this week, and before another week has passed will probably reach Cleveland and pass up the rivers. Their quaint build and the fact that as far as possible they are duplicates of the original fleet will make it worth while keeping a good lookout for them.

Progress of the Shipmasters' Association.

(From the Association Directory.)

March 2, 1886, through the efforts of Martin Niland, William Dickson, Parlan McFarland, Edmund Cordon, Jno. H. Dessette and other well-known lake captains, some of whom were as influential as the above, there was formed at Buffalo, N.Y., the organization known as the Ship Masters' Association, formerly the Excelsior Marine Benevolent Association. That it had a good foundation is proven by the present membership, consisting of between 800 and 900 of the better class of lake masters.

The condition of finances shown in the last annual report proved that its financial policy was sound. Since its organization the association has paid twenty-eight death claims, eleven having been paid during the past year. Considering the extra hazardous risk on lives of lake captains this is very reasonable life insurance. Then there is some satisfaction in knowing that

MEMBERS OF THE GRAND LODGE, SHIPMASTERS' ASSOCIATION.

when an assessment is made it is for the benefit of the family of a friend and brother. In addition to the social and beneficial benefits, through discussions at their meetings, the association has been influential in securing needed legislation on raft towing, lights, fog signals and regulation of speed in narrow channels. The discussions and lectures on compasses, affairs in admiralty, and other subjects, which are features of the regular weekly meetings held when navigation is closed have been of great benefit to the members.

The following from the address of the grand president should be the key-note of the organization: "The great truth that every member is bound to do something to benefit the fraternity at large has become recognized as the fundamental principle of our organization, and it is no longer necessary to support this truth by argument; all that remains for us to do is to point out its application and enforce its importance."

Electric Buoy System—Chicago Marine.

WESTERN OFFICE, MARINE REVIEW,
No. 701 Phoenix Building, CHICAGO, Ill., June 22.

The electric buoys were not lighted last Saturday, the work not being completed as soon as was expected. The work progressed very smoothly, however, one break only being made. Some steamer caught the cable in her wheel, near the Jackson park pier, and cut it in two. It was thought that the steamer was the Columbus, as she had a bucket broken off her wheel about that time. The break was quickly repaired, and the line will probably be lighted up this week. Great credit is due to Commander Brice and the Bishop Gutta Percha Company for the excellent manner in which the work has been done.

Capt. George Manning, an old lake master, whose home was in Detroit, died here. Capt. George Tebo, always active in the good work of the Shipmasters Association, soon heard that the dead captain had been a member of the order, and took charge of the body, giving personal attention to preparations for removal of the remains to Detroit and the interment there. The work of this association is deserving of the highest praise. Although not an old organization it has among benevolent socities few equals. Composed only of good men, it is not only an honor to be on its roster, but once a member, no matter what port he may be in, sick or well, if a captain makes himself known to the lodge there, he is sure of friendship and care.

Lumber carrying is more stagnant if anything than a week ago. It is generally understood that most building deals are off. The dullness in building can best be shown by the fact that there are 6,000 carpenters and 2,000 bricklayers out of employment here, a fact that Chicago papers do not seem at all anxious to dwell upon.

Encouraging Young Engineers—Naval Items.

Special Correspondence to the MARINE REVIEW.

WASHINGTON, D. C., June 22.—The revenue cutter service is desirous of filling the vacancies that exist in it with young men who are thoroughly educated in mechanical engineering, or men of good general education with practical experience in engineering. If such young men will apply they can be designated to take the examination, from which appointments will be made in the order in which the candidates pass. On the 26th inst. a board of engineer officers will meet in the treasury department for the examination of candidates for appointment as second assistant engineers in this service, and the secretary of the treasury has directed a number of candidates from schools of technology to appear before the board.

The attorney general has dashed the hopes of the construction corps of the navy by ruling that the department can not build the new gunboats of composite type. The question was submitted to him by Secretary Herbert whether he could lawfully contract for the construction of one or more of the light-draught gunboats authorized by the act of March 3, 1893, on what is called the composite plan, the hull frames being of steel covered by wood planking and sheathed with copper, with a view to fitting the boats for tropical waters. The act contemplates the construction of gunboats of steel.

Notwithstanding the failure of the contractors who lost $70,000 in attempting to sink a caisson for a light-house at Diamond shoals, Cape Hatteras, N. C., the light-house board, by its recent action in authorizing the expenditure of $5,000 for submarine boring, shows a determination to still further pursue the search for a solid bottom. An appropriation of $300,000 for a light at this point is available.

Buffalo Port Matters.

Special Correspondence to the MARINE REVIEW.

BUFFALO, N. Y., June 22.—As the drowning of the four surfmen at Cleveland in the storm of May 17 has again been brought up and some adverse comment made by unfriendly writers, it is but fair to the service to give Supt. Chapman's statement of the circumstances as he understands them and as they are given in the wreck report furnished him by Keeper Distel, who barely escaped with his life. Supt. Chapman dislikes any connection with anything like controversy, but states positively that he can find no fault with either boat or crew: A combination of circumstances all worked against them. As they were going down the river in the Dobbin's boat, they saw a mighty wave coming. There was not time to avoid it and the keeper felt that he must meet it before it broke, so he ordered the men to pull hard and steered straight for it. But for the breaking of an oar this feat would have been accomplished. But this accident threw the unlucky surfman against the next man and probably demoralized a third and thus almost stopped the rowing on one side. This gave the boat sheer enough to catch the wave at its worst, and the superintendent says no boat ever built would withstand it. She rolled over, but showed her good qualities by righting again. Being light she floated high on the water, but the men went down deep into the water and came up so far from the boat that they could not reach it. A counter current also added to the difficulty and the driftwood in the river actually appears to have added to the danger. Under such circumstances the superintendent can see nothing blameworthy in the conduct of either boat or crew. People who condemn the work of surfmen in such a terrible position ought to be given a chance to show their powers in some way other than in ink slinging.

Secretary Keep of the Lake Carriers' Association is of the opinion that the raft question will be settled without direct appeal to the board of engineers. At the Detroit meeting both parties were cautious and declined to present their ideas as to the proper width of rafts, but this reticence is not likely to last. The matter ought to be fixed up by correspondence, and probably will be. Secretary Keep is tired of waiting for somebody to move in the wrecking reciprocity matter and is preparing to send a letter of inquiry to the state department, with the endorsement probably of Congressman Lockwood of this city. This ought to set the wheels in motion, that is if the matter has merely been overlooked and has no real hitch in it.

Another "World Beater."

Special Correspondence to the MARINE REVIEW.

KINGSTON, ONT., June 22.—Captain William Power, who has for almost half a century been engaged in modelling and building ships, and who says he ante-dated some of the patents of Capt. McDougall, is now on his life work, a design of an ocean passenger steamship to have great speed. Her load-line length will be 800 feet, with proportionate beam, and to be propelled by four screw wheels, three at the stern and one at the fore foot. By this arrangement of motive power and a working pressure of 200 pounds of steam to the square inch, the forward wheel making 30 per cent. more revolutions than the wheels at the after end of the ship, he figures that his boat will make much higher speed than any ship has yet attained.

The Montreal Transportation Company's new steel steamer Bannockburn, built at the Cleveland dock yard of Sir Raylton Dixon & Co., Middlesborough, was given an official trial a few days ago and will soon be ready for service on this side. The trial was satisfactory in every particular. This boat, which is 254 feet long and must be cut in two for passage through the St. Lawrence canals, has already been described in the REVIEW. The engines were fitted by the North Eastern Marine Engineering Company Limited, Wallsend on Tyne, and the cylinders are 21, 34 and 56 inches by 39 inches stroke, with two large steel boilers working at a pressure of 160 pounds per square inch. The construction of the vessel has been under the superintendence of Captain A. McMaugh of St. Catherines, Ont., and Messrs. Bruce Harman and Alex. Cleghorn of Glasgow.

The St. Lawrence river is 32 inches higher now than it was last year at this time.

Record of Speed and Big Cargoes.

[*Masters or owners of freight boats are invited to report improvements on this list.*]

Iron ore: Maritana, Minnesota Steamship Company of Cleveland, 4,260 gross or 4,771 net tons, Escanaba to South Chicago; S. S. Curry, Hawgood & Avery Transit Company of Cleveland, 3,852 gross or 4,314 net tons, Escanaba to Fairport.

Grain: Selwyn Eddy, Eddy Transportation Company of Bay City, 139,820 bushels of wheat, Detroit to Buffalo; E. C. Pope, Eddy Transportation Company of Bay City, 125,730 bushels of corn, Chicago to Buffalo; Onoko, Minch estate, Cleveland, 187,657 bushels of oats, Chicago to Buffalo.

Coal: E. C. Pope, Eddy Bros. of Bay City, 3,950 net tons anthracite, Buffalo to Chicago.

Speed: Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour.

Inventions of a Marine Nature.

Specially reported from the patent office, Washington, D. C., for the MARINE REVIEW.

499,296—Ice breaking and clearing apparatus, Johannes A. Kruitsbrink of Arnhem, Netherlands; filed Nov. 10, 1891; serial number, 411,532.

499,319—Apparatus for calming the waves of the sea, by Benvenuto B. D'Alessandro of Paris, France; filed Nov. 7, 1891; serial number, 411,228.

499,321—System for propelling canal boats by electricity, by Samuel W. Gear of Buffalo, N. Y.; filed Jan. 26, 1893; serial number, 459,889.

499,495—Apparatus for determining a ships distance from an object, by Edwin Baker of Cardiff, England; filed Dec. 27, 1892; serial number, 456,412.

499,569—Ship steering gear, by William A. Oglethorpe of Liverpool, England; filed July 13, 1892; serial number, 439,920.

Official Numbers and Tonnage.

The bureau of navigation, E. C. O'Brien commissioner, assigned official numbers and tonnage to the following lake vessels during the week ending June 10: Steam—Sainte Marie, Detroit, Mich., 1,357.04 tons gross, 678.52 net, No. 116,574; City of Holland, Grand Haven, Mich., 626.26 tons gross, 512.06 net, No. 126,967; Morgan, Marquette, Mich., 28.91 tons gross, 14.96 net, No. 92,517. Sail—Ed. McWilliams, Detroit, Mich., 743.91 tons gross, 706.72 net, No. 136,363; DollieM., Marquette, Mich., 38.00 tons gross, 34.07 net, No. 157,373; Dixie, Grand Haven, Mich., 8.60 tons gross, 8.49 net, No. 157,372. Unrigged—Ella Louisa, Oswego, N.Y., 152.09 tons gross, 144.49 net, No. 36,853.

TRY THIS TRAIN.—Train No. 8, the Buffalo accommodation, is a great favorite with patrons of the Nickel Plate road. It leaves the Broadway depot 6:45 a.m, Madison avenue 6:50 a. m., Euclid avenue 7 a. m. Arrives Buffalo 1:50 p.m. Try this train when going east.

Capt. Alex. McDougall's Patents.*

WRECKING BOAT—SPECIFICATION FORMING PART OF LETTERS PATENT NO. 488,574—DATED DEC. 27, 1892—APPLICATION FILED SEPT. 17, 1891—SERIAL NO. 406,011—NO MODEL.

In these specifications Capt. McDougall explains that his invention relates to a vessel adapted to be used in raising sunken wrecks, removing rocks, snags, &c. "I propose," he says, "to take one of the improved tow boats or steam tow boats, invented by me and described and claimed in various letters patent and applications for letters patent, and place a number of heavy metal pipes, arranged vertically therein, in line with each other and extended from the extreme bottom to the extreme top of the boat. These pipes will not interfere in any way with the carrying capacity of the boat, so that it may be used for carrying freight and for towing other boats when not engaged in wrecking. When the vessel is to be used in raising sunken wrecks I will first place a suitable wooden or metallic scaffold within the hull, adjacent to each vertical pipe, and resting on the false bottom, so as to firmly support the top or deck and bring all the strain upon the bottom, which is the strongest part of the boat. Two of these vessels will now be moved to the scene of the wreck and will be placed on each side of the sunken boat, and parallel therewith. A very heavy chain will then be passed down through each vertical pipe and firmly secured at its upper end, preferably by

Fig. 1.

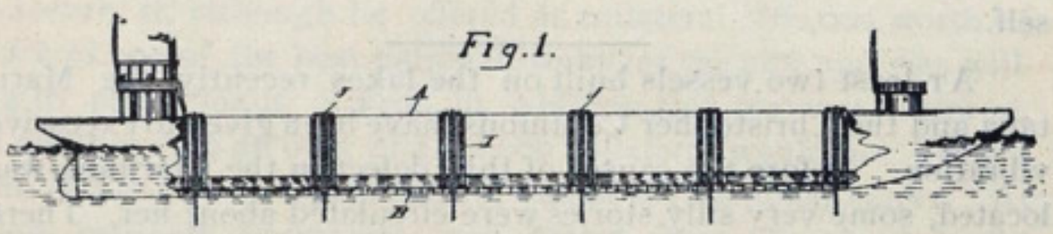
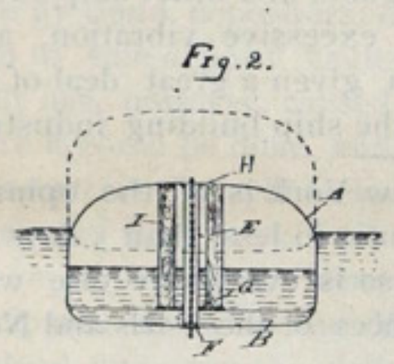
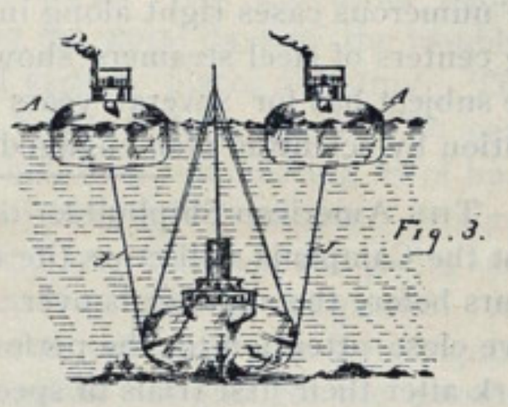


Fig. 2.





means of a heavy steel bar pressing through one of the links of the chain and resting upon the deck. These chains are now passed under the sunken vessel by divers or by other means, and the chains from one wrecking boat are secured to the chains of the other wrecking boat. Water is now pumped into the water bottom and tanks of each wrecking vessel, or into the hull of each vessel, so as to submerge each boat to the proper level which will slack up the chains. The slack is now taken up so as to make the chains taut, and the water is pumped out of each wrecking vessel by means of the steam pumps which are carried on each boat. Each boat being now lightened will rise and the sunken boat will be carried clear of the bottom so as to swing on the supporting chains. The two vessels are now moved in toward shoaler water until the wreck grounds. The wrecking vessels are again submerged, by pumping water into them, and the slack of the chains is again taken up. Once more the wrecking vessels are relieved of the water therein by the steam pumps and the sunken boat will be again raised and moved in toward shoaler water and again grounded. These operations are continued until the wreck has been raised sufficiently to be relieved of its cargo and pumped out. As is well known the operation of raising submerged wrecks can be greatly facilitated by working with the tide, so as to pump the water into the wrecking vessel on a low tide or when the tide is going out, and pumping the water out of each wrecking vessel on a high tide or when the tide is coming in. In this way the rise of the tide will be utilized in lifting the wreck. The principal object of my present invention is the production of an improved wrecking vessel which can be used for carrying freight or for towing other vessels when provided with propelling mechanism, and which will be of the highest efficiency in both capacities.

"Another object of the invention is to produce a wrecking vessel wherein all the strain will be brought on the bottom thereof and not on the deck as is now the case, and wherein the weight of the wreck will be impended from the central part of the boat, so that there can be no danger of the wrecking vessel being thrown out of her equilibrium. For a better comprehension of the invention attention is directed to the accompanying drawings. Fig. 1 is a longitudinal view partly in section of one of my improved tow boats when used as a wrecking vessel, Fig. 2 is a cross sectional view of the same, and Fig. 3 is an end elevation illustrating the manner of putting the improved vessel in use. A is one of my improved tow boats converted into a wrecking vessel. The particular form of boat illustrated in the drawings is similar in most respects to that patented by me in this country on June 3, 1890, and numbered 429,468, being provided with an arched top, a curved bottom, straight parallel sides, a spoon shaped bow and a skeaged stern. B is the water bottom, beneath the false bottom, upon which the cargo rests, and C and D are water tanks which are placed in the bow and stern of the vessel, beneath the floors of the forecastle and after cabin respectively. The water bottom B and tanks C and D are to be filled with and relieved of water by means of steam pumps which are carried on each vessel and which may be placed either in the bow or stern or both. If desired there may be suitable connections from the said steam pump or pumps by which water may be pumped into and out of the hull proper of the vessel. E E are a number of heavy metallic pipes which are arranged on in front of the other in the hull of the vessel and extending from the extreme bottom to the extreme top thereof. F is a heavy angle iron collar at the bottom part of each pipe E. The vertical flange of each collar F is riveted to the inside of the lower part of each pipe. By means of this collar F the lower part of each pipe is secured very firmly and there is no danger of leaking. By extending the vertical flange of the collar F up into the interior of its respective pipe E it prevents any chafing or wearing by the chain which passes down through the pipe. G is an angle iron collar secured to the outside of each pipe E and to the top of the false bottom and serves to strengthen the pipe at this point. This collar also gives a bearing for the false bottom on the pipes E E and prevents water from leaking into the hold of the vessel from the water bottom. H is another angle iron collar which is riveted to the inside of each pipe E and to the bottom side of the top or deck of the vessel. When the improved vessel is to be used for the purpose of raising submerged wrecks I make use of a suitable scaffold I, which is built up in any suitable way between the false bottom and the top or deck of the vessel, as shown in Figs. 1 and 2. By means of this scaffolding the strain which is imposed on the deck is taken up by the false bottom and from thence by the intermediate frame work to the bottom of the vessel, which is best calculated to stand this strain, as it rests upon the water. It will be understood that this scaffolding is only temporary and is to be used only when the vessel is to be used as a wrecking boat. J J are chains which pass down through the pipes E E and are provided with some suitable device, such as a heavy steel bar passing through one of the links, by which the chains may be supported by the deck of the vessel in such a manner that any slack may be quickly and easily taken up. At the lower end of each chain is a suitable form of tackle or hook by which the chains from one wrecking vessel may be securely fastened to the chains of the other wrecking vessel.

"In Fig. 3 is very clearly shown the manner of putting the vessels into use in wrecking a submerged steamboat. In case the water which will be contained in the water bottom and tanks is insufficient to properly submerge the vessels, water may be pumped directly into the hold of the vessel. What I claim as new and desire to secure by letters patent is: An improved wrecking vessel, consisting of a hull, having a curved top, straight parallel sides, spoon-shaped bow and skeaged stern, and water-tanks within said hull; vertical pipes E E extending through said hull from top to bottom; and chains J J passing down through said pipes, substantially as set forth."

*Under this heading we will publish specifications accompanying letters patent granted to Alexander McDougall since his first application for a patent on the whaleback type of vessel, May 1, 1880.

The first steamer built by the Cunard company was the Britannia, which was launched Feb. 5, 1840, or fifty-three years ago. She was built of wood by Robert Duncan at Port Glasgow, her length being 207 feet; breadth, 34⅙ feet; depth, 22⅙ feet; tonnage, 1,156; passengers carried, 115; cargo, 224 tons. The engines, by Robert Napier, were side levers with two cylinders, 72 inches diameter by 82 inch stroke of piston, driving paddle wheels 28½ feet diameter. Steam of 20 pounds pressure was provided by four flue boilers, with twelve furnaces, which consumed 38 tons of coal per day. The speed of the vessel was 8½ knots, with the engine developing 710 indicated horse power coal, consumption, over 5 pounds per indicated horse power; time in making voyage, fourteen days.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Chicago Office, Western Union Building, 706 Phoenix Building.
Published every Thursday at No. 516 Perry-Payne Building, Cleveland, O.

SUBSCRIPTION—$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,657 vessels, of1,183,582.55 gross tons register in the lake trade. The lakes have more steam vessels of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of steam vessels of 1,000 to 2,500 tons on the lakes on June 30, 1892, was 321 and their aggregate gross tonnage 534,490.27; in all other parts of the country the number of this class of vessels was,on the same date, 217 and their gross tonnage 321,784.6. The classification of the entire lake fleet is as follows:

Class.	Number.	Gross. Tonnage.
Steam vessels	1,631	763,063.32
Sailing vessels	1,226	319,617.61
Canal boats	731	75,580.50
Barges	69	25,321.12
Total	3,657	1,183,582.55

Tonnage built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
1888	222	101,102.87
1889	225	107,080.30
1890	218	108,515.00
1891	204	111,856.45
1892	169	45,168.98
Total	1,038	473,723.60

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1892.	1891.	1890.	1892.	1891.	1890.
No. vessel passages	12,580	10,191	10,557	3,559	4,207	3,389
Ton'ge, net regist'd	10,647,203	8,400,685	8,454,435	7,712,028	8,698,777	6,890,014
Days of navigation	223	225	228	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

IT is more than three years since the engineer corps of the war department finished work on the Lime-Kilns cut, a channel near the mouth of the Detroit river that was dredged out of solid rock at an immense cost, and yet the light-house board is to-day dallying with the vessel owners of the lakes over an expense of a few hundred dollars a year required for lighting this important highway. It is claimed, of course, that appropriations made for light-house purposes are insufficient for the requirements of the service, but it does seem as though the exegencies of this case should have prompted the board, which in the end has more influence in the matter of appropriations than any other interest, to have fully provided for the lights long ago. After having maintained the crossing lights and a small light at Ballard's reef just above the crossing for several years at their own expense, the vessel owners, through the Lake Carriers Association, made a contract a year ago with the board, whereby they were to be relieved of this expense for a year by the board paying $1,800 for the service. This contract expires next week, and new light-ships for the places mentioned, which the board had expected to have in service by the time of expiration of the contract, will probably not be finished for several weeks to come, and the officers of the board have as yet given no answer as to whether they will look after the lighting of the river after the expiration of the contract. It is hardly probable that the board, after lighting this dangerous locality for a year, will give it up altogether in the interim before the new light-ships are completed, but the vessel owners have nevertheless been called upon, in the absence of any information as to the board's intention, to hold a meeting this week, as it is out of the question to allow the service to be dropped for a single day.

HOW OFTEN after the sinking of a vessel attended with loss of life has it been found that the small boat or boats which she carried were unseaworthy from not having received proper attention? On the lakes this is especially true of sailing vessels, whose masters are responsible to no government authorities for the care of yawls, life rafts or other appliances aboard their ships, and who, in some cases, have been known to allow wooden life boats to go for the greater part of a season without examination. In England seamless steel boats are of late replacing wooden boats aboard many ships. The first cost of these boats is somewhat greater than that of the wooden boats, but they are more economical in the end and appear to serve the purpose much better than wooden boats.

NOW THAT the highest court of admiralty jurisdiction in the United States, the circuit court of appeals, has decided that Frederick W. Vanderbilt's yacht Conqueror was not dutiable and that her detention by the government was unlawful, it might as well be admitted that at no time during the progress of legal action attending the question of admitting the yacht to free entry at American ports did the friends of shipping in this country have very much hope of winning their case under present laws governing the admission of yachts. They managed, however, to stir up a good deal of feeling against Mr. Vanderbilt and others, who, after becoming rich under American protection, go to England to spend their money when an occasion presents itself.

AT least two vessels built on the lakes recently, the Maritana and the Christopher Columbus, have been given to excessive vibration. Before the causes of this defect in the Maritana was located, some very silly stories were circulated about her. There are numerous cases right along in England and other ship building centers of steel steamers showing excessive vibration, and the subject has for several years been given a great deal of attention by scientific men engaged in the ship building industry.

THE American Shipbuilder of New York is of the opinion that the Campania will cross the Atlantic in less than 5 days 12 hours before the summer is over, and so is everybody else who gave close attention to the performances of the Paris and New York after their first trials of speed.

The MARINE REVIEW will be pleased to mail to any address on receipt of a postal card request a copy of a pocket map, showing an excellent outline of the world's fair grounds and a map of Chicago. If you are going to the fair it will save you many useless steps.

The Pope-Pelican Salvage Case.

During the past week a settlement was made by the underwriters with the owners of the schooner Pelican, which was sunk off Ashtabula this spring, and the incident brings to mind an odd claim that has been hanging over the boat since she was picked up on Lake Superior last season in a dismantled condition by the Eddy Transportation Company's steamer E. C. Pope. The Pelican was then owned by the Winslow estate of Cleveland, but she was sold during the past winter to Capt. William Mack and others, also of Cleveland, for $12,000. When picked up by the Pope she was helpless, as she had lost all her canvas in a storm after being adrift from her steamer. The Pope towed her about sixty miles to the Sault, and for this service the owners of the big steamer put in a bill for $12,000, an amount greater than the valuation given her afterward in appraisal and equal to the price at which she was sold during the winter. The big salvage claim was demanded, however, and trial of a suit brought in Detroit was had several months ago, but notwithstanding the loss of the vessel in the meantime, no decision in the case has been rendered and there has been no settlement of it. Vessel men are very much interested in the outcome of the case on account of the big claim demanded for a little service, as it was not shown that the Pope encountered great danger in picking up the schooner, and it is the general opinion that a few hundred dollars ought to cover the charges.

Money and the Lake Freight Situation.

Although the REVIEW has refrained from connecting the stringency in money with the lake freight market, in order to avoid any possibility of increasing the excited feeling that has prevailed in financial circles, everybody who is well informed in shipping matters on the lakes has understood fully the effect of the money scare on lake business, and knows full well that instead of the present depressed condition of freights there would undoubtedly have been a rising market, even upon the low basis at which the season started, if it were not for the borrowers' panic that has put the bankeis of the country through an awful trial. It has been a borrowers' panic and nothing more, and now that the worst is over with there can be no harm in referring to it. Probably no collection of banks in the country were better fitted to meet this difficulty than the banks of Cleveland, in which iron ore and coal shipping interests predominate, and yet these banks have been forced, in their efforts to be prepared for the worst possible results, to put some of their customers to very severe taials. A few instances will serve to show that loans were so thoroughly suspended that collateral was not a question. One case is noted in which a leading business man wanting a loan of $8,000, on which $2,000 could be made in sixty days, was unable to secure it, although he offered as collateral $60,000 worth of stock of one of the best national banks of the city and was willing to pay a bonus of $100, in addition to 7 per cent. interest. In another case an offer of $200,000 collateral would not bring a loan of $10,000 to a president of one of the national banks. At a low estimate $5,000,000, was drawn from Cleveland banks alone by timid depositors during the worst days of the trouble, to go to safe deposit vaults and various places of hiding. The result has, however, caused the banks to force debts to be paid where it could be done, and in this there is a clearing up of business matters that will undoubtedly have its advantages. Among the results most prominent in local iron circles is the entire suspension of further dividends from iron mining companies. As anticipated last week the Minnesota company passed its regular dividend, and even the Lake Angeline has quit, for the present at least, the dividends that have been so regular with the stocks.

Both grain and ore freights have fallen off during the week to the lowest figures of the season. Vessel owners still have confidence in an active movement of freight, to make up for the great shortage in shipments up to this time, but until the financial outlook shows a marked change, any speculation as to the future of the market is of no account.

Life Saving Appliances.

George Learman of Cleveland, who has patented a number of life saving appliances, notably a self-detaching hook for life boats that has met with general favor from masters of vessels, has been giving considerable attention to details connected with the recent accident in Cleveland, through which four members of the life saving crew were lost after their boat had capsized. He suggests that in trying to render assistance in cases where there is danger of a life boat being overturned, it might be well to have attached to the boat a number of small lines that could be fastened to belts worn by the life savers or tied around their waists. If the men should be dumped out of their boat with these lines attached, they would, he claims, find the lines of great assistance to them in again reaching the boat. Mr. Learman says that he expects opposition to his scheme from men experienced in such matters, on the ground that a line might prove a positive detriment to a man thus dumped into a heavy sea, on account of the danger of the swimmer becoming entangled in it, but he thinks some plan of this kind should be given a trial. He also claims that good swimmers are often drowned in breakers by the spray splashing into their faces and smothering them, though they might be strong enough physically to keep above water for some length of time in the heaviest of seas. He is having made a rubber head covering similar in appearance to the helmet of a diving suit, with which he will soon make a trial of endurence against seas of the kind in which he claims good swimmers are smothered. This head covering will be bag-shaped below the neck and made to tie under the arms, and it will not be necessary to have it fit closely at any point. It will not be very costly, as it will be simply a piece of rubber or waterproof cloth shaped and sewed up, with two pieces of glass at the part over the eyes, to permit of the wearer seeing all about him. A cone-shaped attachment at the top of the head will admit air, but not enough water to render it disadvantageous to the swimmer.

The Coal Shortage.

In connection with a statement in the last issue of the REVIEW showing a falling off of 162,432 tons in coal shipments, hard and soft, to Lake Superior up to June 1, it may be of interest to sum up the shipments of hard coal by lake from Buffalo in April and May of this year and compare them with the movement from that port during the same months last year. Last year the total shipments out of Buffalo in the month of April were 112,439 tons; this year in April, 178,040 tons. In May last year shipments were 273,463 tons; in May this year, 373,433 tons. Thus it will be seen that the shortage is entirely in soft coal as the aggregate movement from Buffalo to June 1 this year is 553,475 tons, against 385,902 tons on the same date last year, a gain of 165,573 tons.

In General.

Campania and Lucania, the names given to the Cunard ships, are taken from old provinces of ancient Italy.

Harland & Wolff of Belfast, Ireland, have the most perfectly appointed ship and engine building concern in existence.

A London cablegram says that a dredge tied last week in the River Mersey is 320 feet in length and is designed to raise 24,000 tons of matter daily in the bar at the mouth of the river, where a difference of seven feet in the water has been obtained within the past few years.

Now it is claimed that the cause of Lord Dunraven's yacht Valkyrie losing her bowsprit and the race to the Britannia, another of the English racers, was the use, to save weight, of a spruce spar instead of one of Oregon pine. A spruce stick, according to the authorities, is not to be trusted in a strain.

On a run from Milwaukee to Chicago a few days ago the world's fair steamer Christopher Columbus was forced for a trial of speed. There are various reports of the speed attained by the big boat, one of which puts it at an average of nearly 23 miles an hour. Although the Columbus is a very fast boat for the lakes, this seems unreasonable, and we have reserved comment on her speed until we can get more definite information.

The Thomsons of Clydebank required two years to build the New York and Paris and Harland & Wolff of Belfast were twenty-eight months in building the Teutonic and Majestic, so that it will not be surprising if the Cramps require a greater length of time for construction of the first two of the American line ships, which will be of a trifle greater register than the New York and Paris and 800 tons larger than the Teutonic and Majestic.

West-bound Sleepers.

Until further notice a special sleeping car for the accommodation of local patrons of the Nickel Plate road will be attached to train No. 1 at Cleveland, leaving Cleveland at 7:20 p. m. and arriving in Chicago at 8:10 a. m. Through sleepers from New York and Boston are also attached to this train. Elegant drawing-room car accommodations will also be found on train No. 3, leaving Cleveland at 6:30 a. m., and train No. 5 leaving Cleveland at 11:28 a. m.

Space in sleeping or drawing-room cars for future dates can be reserved by applying to any agent of the Nickel Plate road.

All trains run seven days a week.

Around the Lakes.

Fully 20,000,000 feet of lumber has already been shipped by water from the head of Lake Superior.

Oscar E. Wilbur of Charlevoix has purchased the steamer City of Grand Rapids from Perry Hanna and others of Traverse City for $8,000.

A decision in the Sheffield-North Star collision case, which was heard finally in the United States circuit court of appeals at Detroit last week, is expected in about thirty days.

The Wilson line steel steamer Yuma, which recently took out of Ashland the largest cargo ever shipped from that port, is now on her way down with 114,000 bushels of wheat from Duluth.

It is reported that Hubbard & Canfield of Toledo paid $45,000 for the side-wheel steamer Shrewsberry, purchased from Buffalo parties to be used as an excursion boat between Toledo and Put-in Bay.

The Murphy Wrecking Company of Detroit is at work raising the steambarge Roland, sunk last fall with a cargo of stone about two miles west of Rattlesnake island, Lake Erie. The boat was purchased by the wrecking company from the underwriters.

In one hour less than four days the Cleveland-Cliffs Mining Company's steamer Pioneer made the round trip, loading and unloading, between Cleveland and Marquette, notwithstanding a loss of an hour at the Sault and three hours more than usual in unloading.

The schooner Bertha Barnes, another of the lumber vessels wrecked on Lake Michigan during the heavy gales that prevailed early in April, has been released. She was on North Point at Racine and it cost about as much to release her as she was worth.

It is announced that Capt. James Davidson of West Bay City has laid a keel for another wooden steamer. This is not surprising on the part of Capt. Davidson. Anybody having the money to spare can build vessels cheaply in times like the present and sell at a profit if they can afford to await improvement in business.

The next vessel to be launched from the yard of F. W. Wheeler & Co. will be the largest wooden consort on the lakes. The boat is for Capt. Wm. Forbes of Port Huron and is 270x42 x20 feet. The Bradley steamer George Stone, which was launched at this yard on Tuesday, after being stuck on the ways, suffered no injuries on account of the accident.

"I lost my consort last February, broke up house-keeping and have since been cast adrift on shore," says a Buffalo engineer in renewing his subscription to the Review, from which he evidently expects consolation. As he fails to tell us anything of the qualifications of his lost sailing mate, or even intimate how she was lost, we must hesitate in measuring the degree of comfort extended.

Judges of the United States district court seem disposed to divide damages in almost every admiralty case that is brought before them of late. L. S. Sullivan and others, owners of the steamer Rust, some time ago sued the Lake Superior Elevator Company of Duluth for damages sustained by their vessel through a trestle falling upon her while she was at the dock of the elevator company. Judge Nelson of the district court at Duluth now holds that the owners of the steamer, having had notice that the trestle was unsafe, was equally at fault and so divides the damages.

Notices to Mariners.

A blue print of the Chicago water front, showing anchorage for vessels, reefs and buoys, including the line of electric buoys, can be had by masters of vessels by applying to the light-house inspector of the ninth district room 1308, Chamber of Commerce building, Chicago, or on board the United States tender Dahlia.

Notice is hereby given that the steam fog-signals at South Manitou light station, Michigan, have been repaired and are in operation.

A few copies of Patterson's Nautical Dictionary held by the MARINE REVIEW are all that are for sale anywhere, since the destruction by fire of plates and all other material entering into the work. The price, $5, has not been raised.

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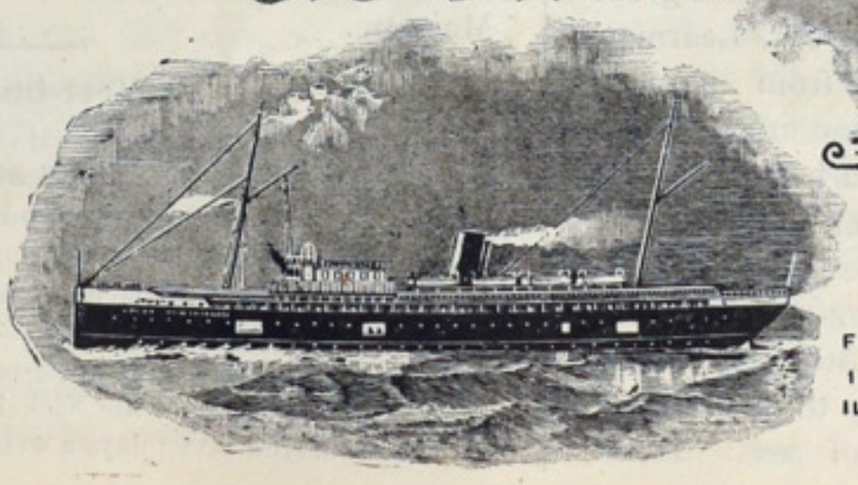

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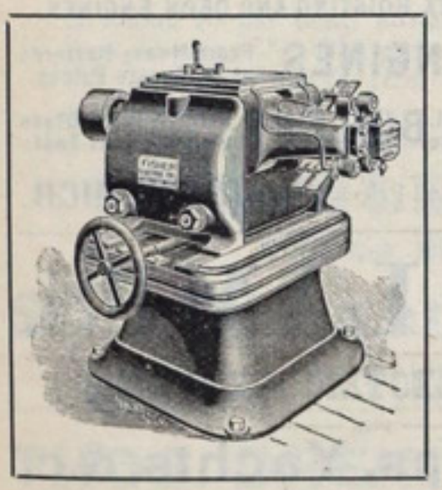

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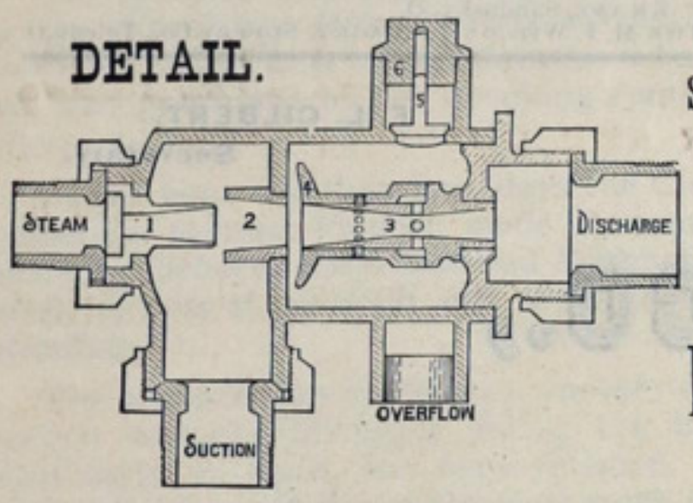

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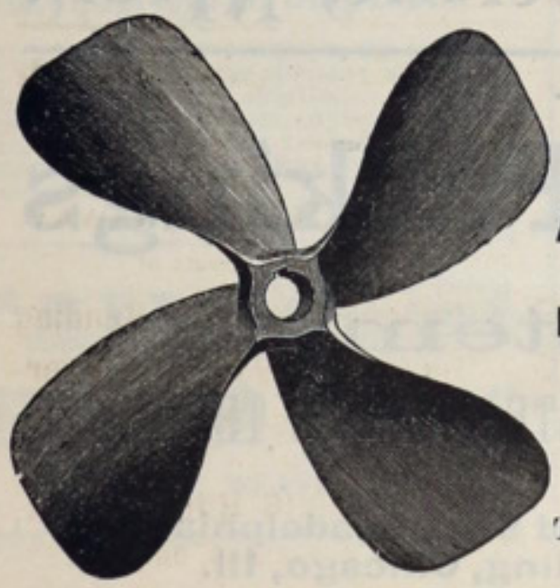

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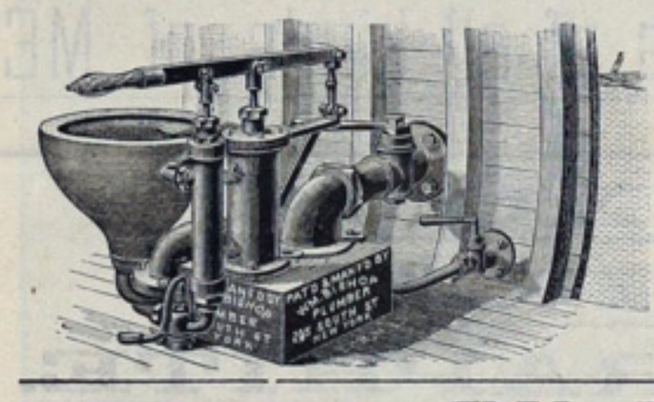

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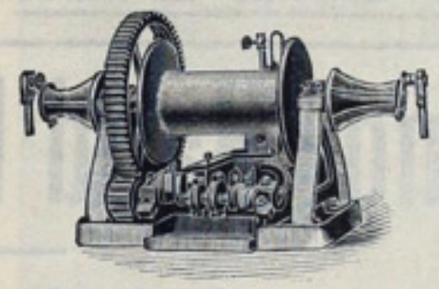

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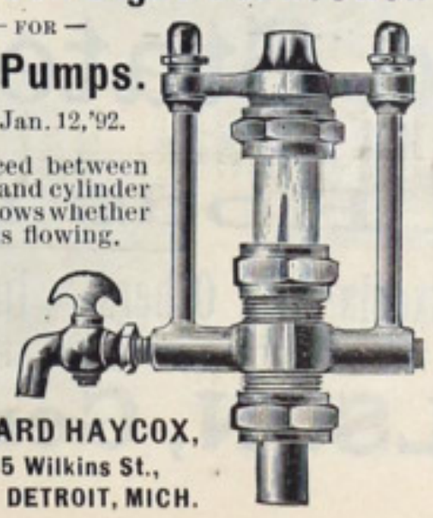

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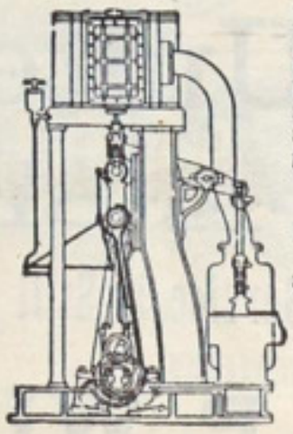

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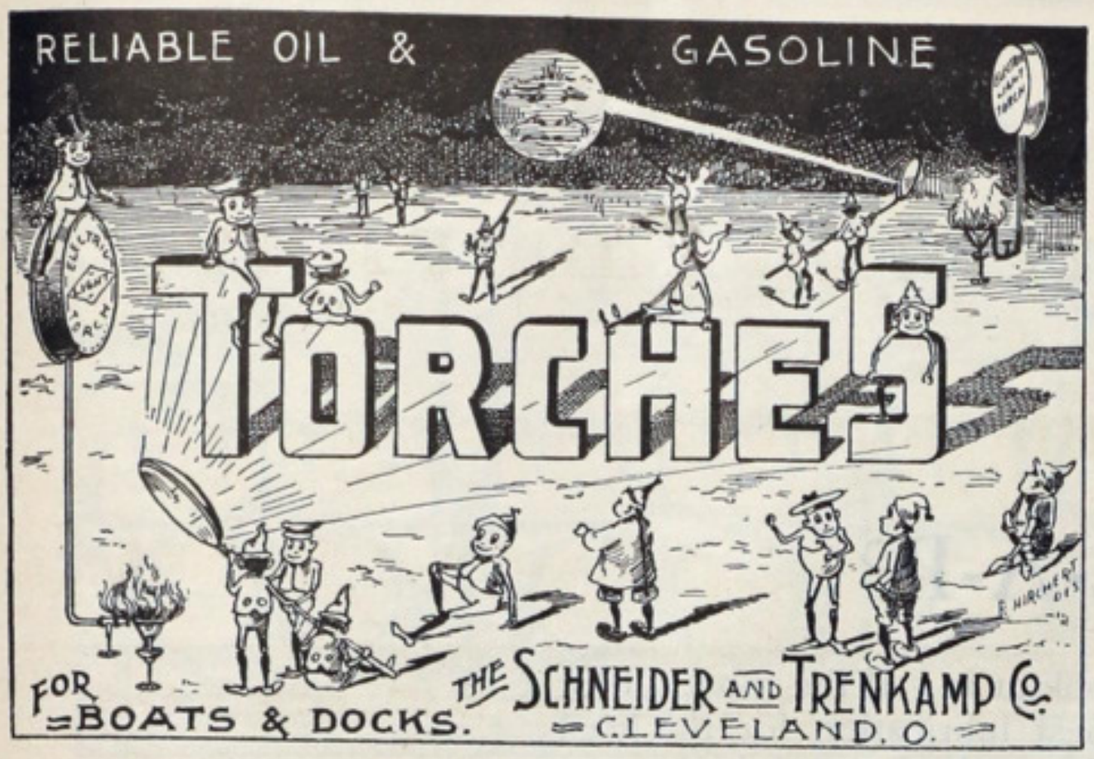

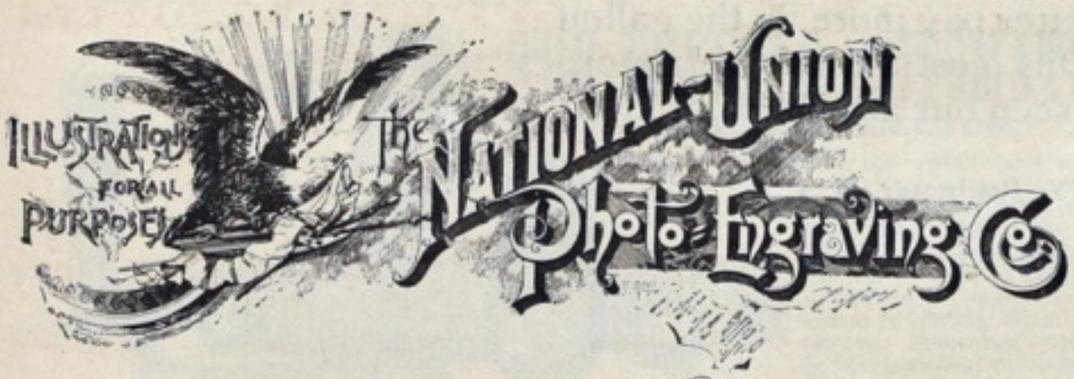

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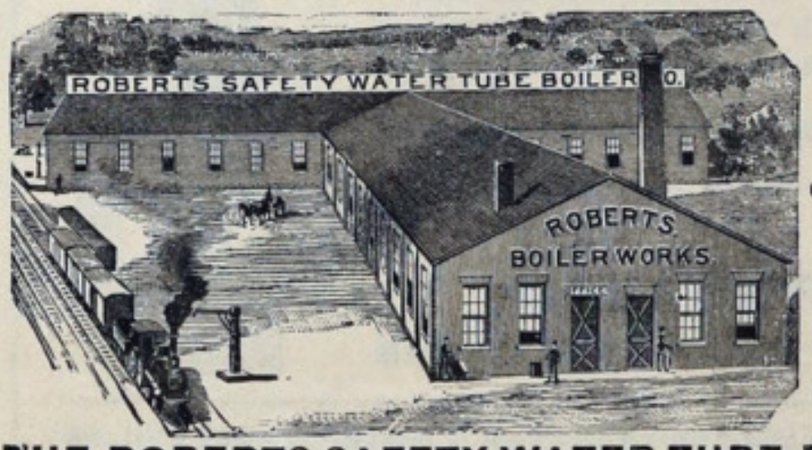

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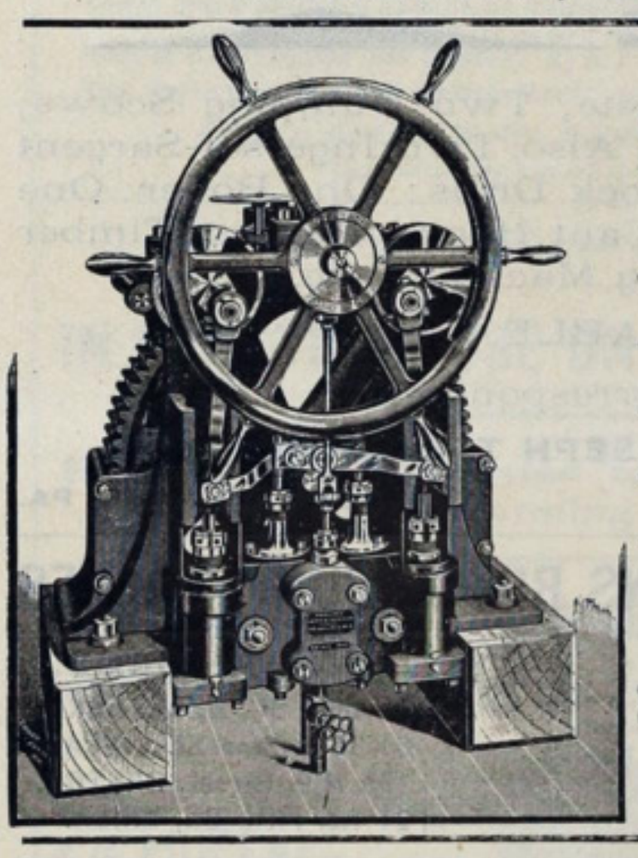

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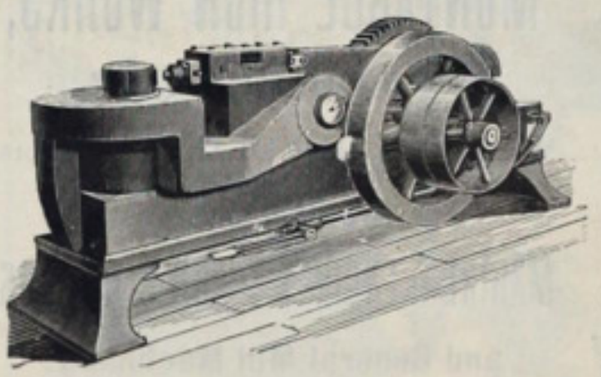

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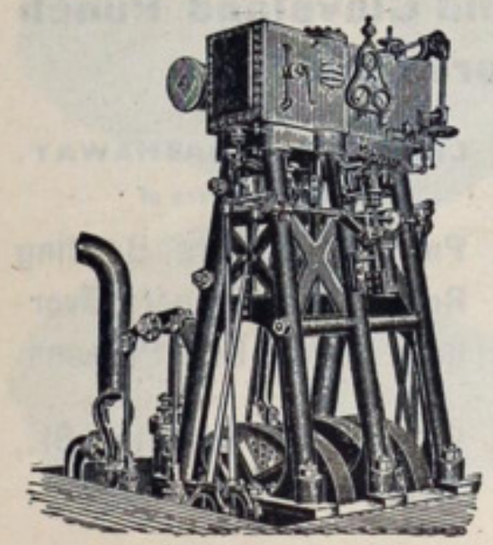

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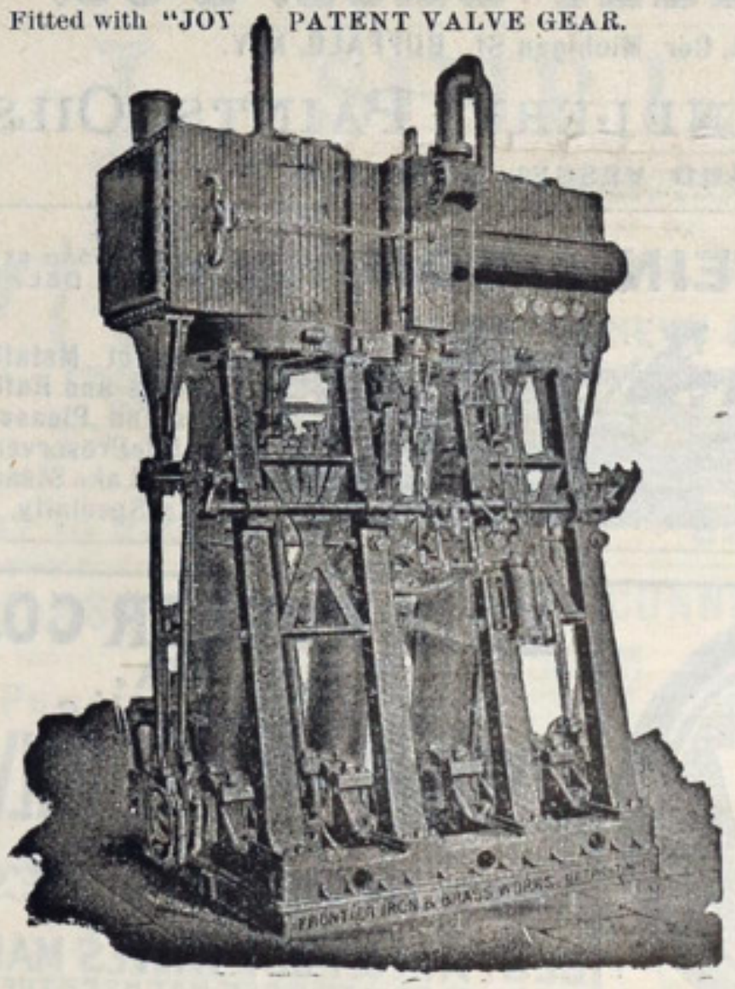

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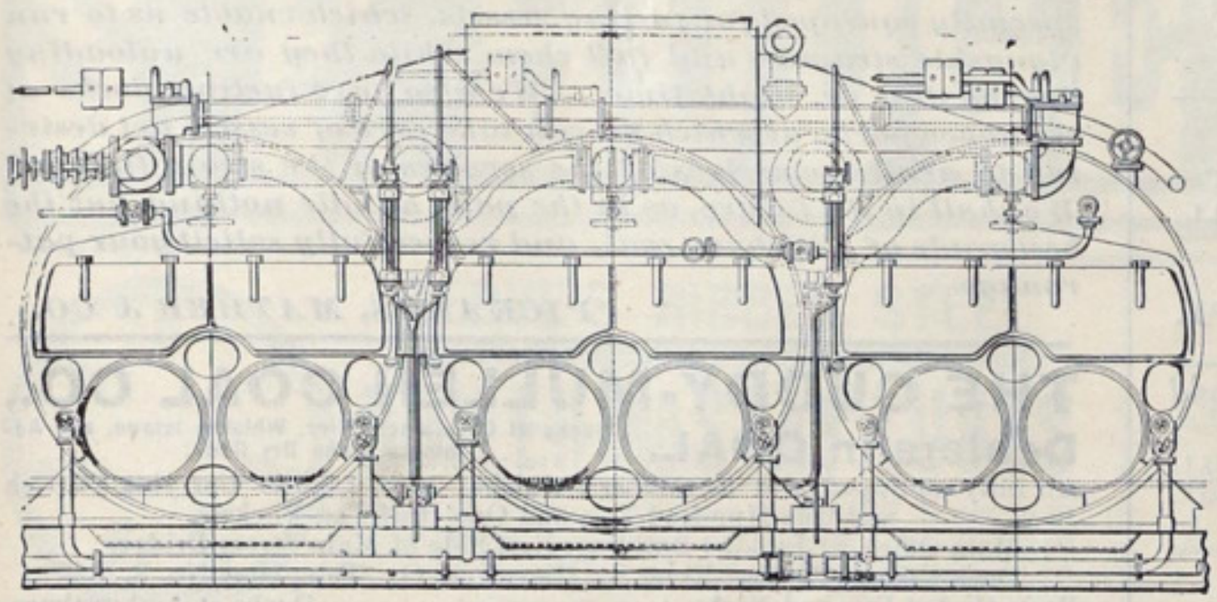

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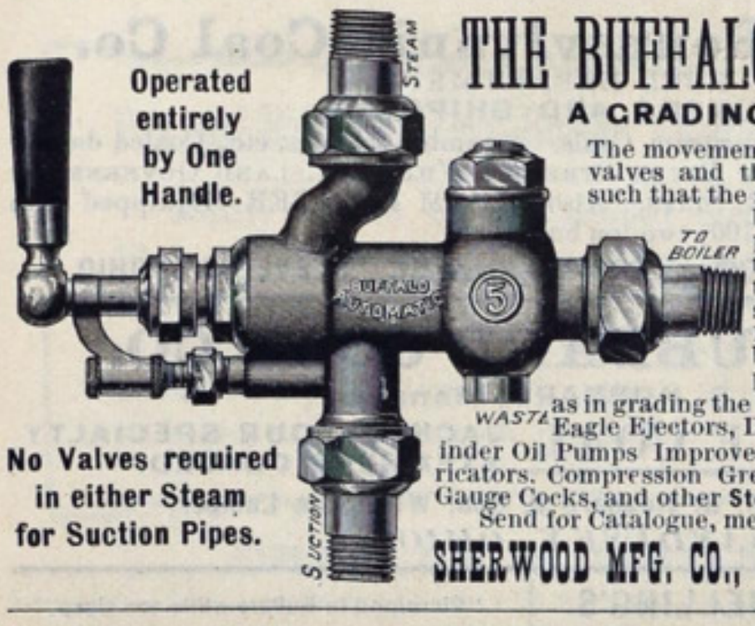

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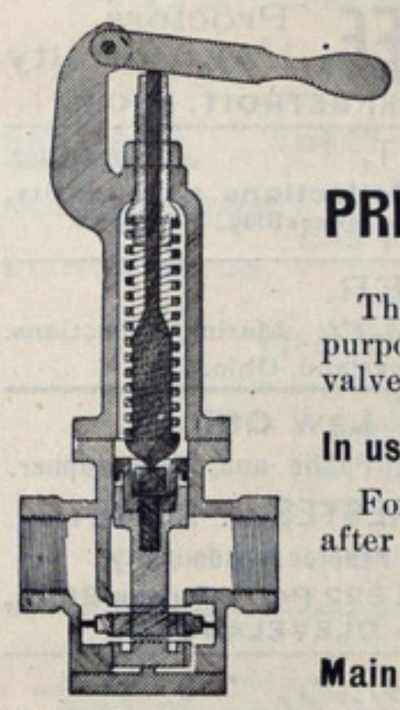

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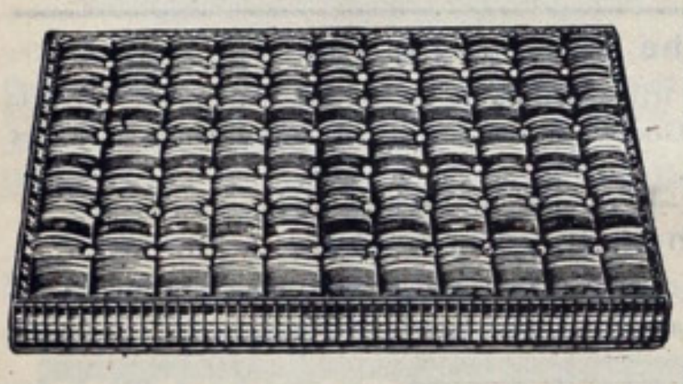

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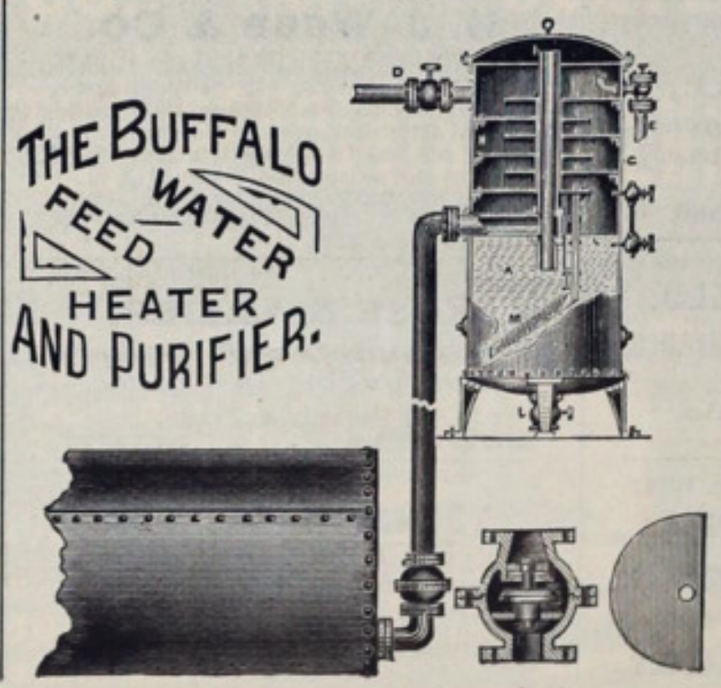

REFERENCES.

A.—Settling chamber.
B.—Boiler.
C.—Feed pipe to boil
D.—Steam pipe.
E.—Water supply pipe.
F.—Check valve.
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H.—Spray chamber.
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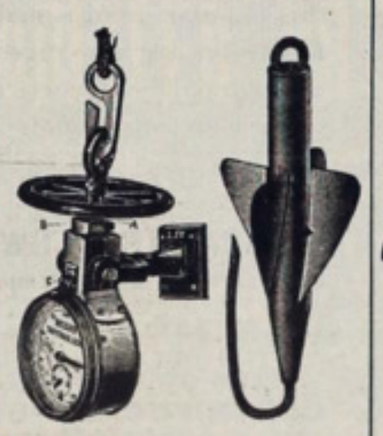

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We beg to call your attention to the fact that we have steam lighters at the ports of Cleveland, Ashtabula and Buffalo, specially equipped for fueling vessels, which enable us to run alongside steamers and fuel them while they are unloading during day or night time. We also have fueling docks at the above ports, at which we can take care of vessels not desiring to avail themselves of the services of the steam lighters. We shall in the future, as in the past, handle nothing but the best grade of Pittsburg coal, and respectfully solicit your patronage.

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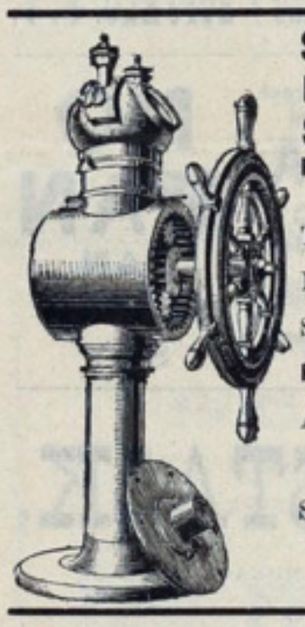

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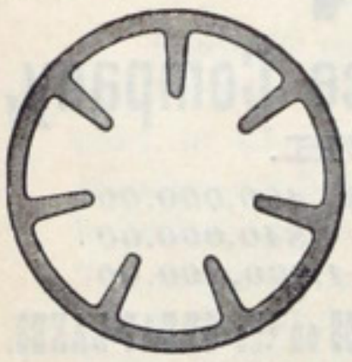

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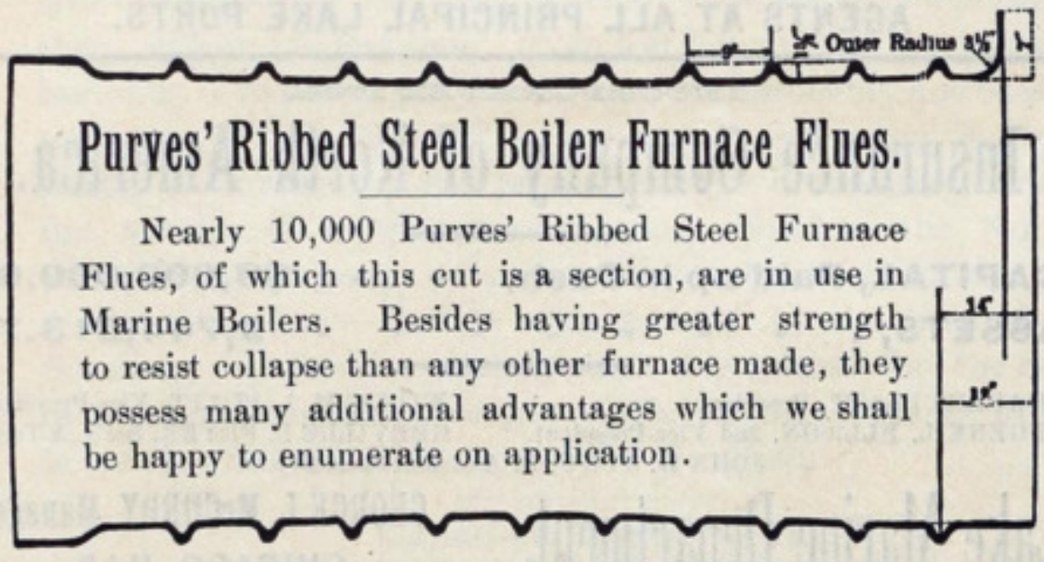

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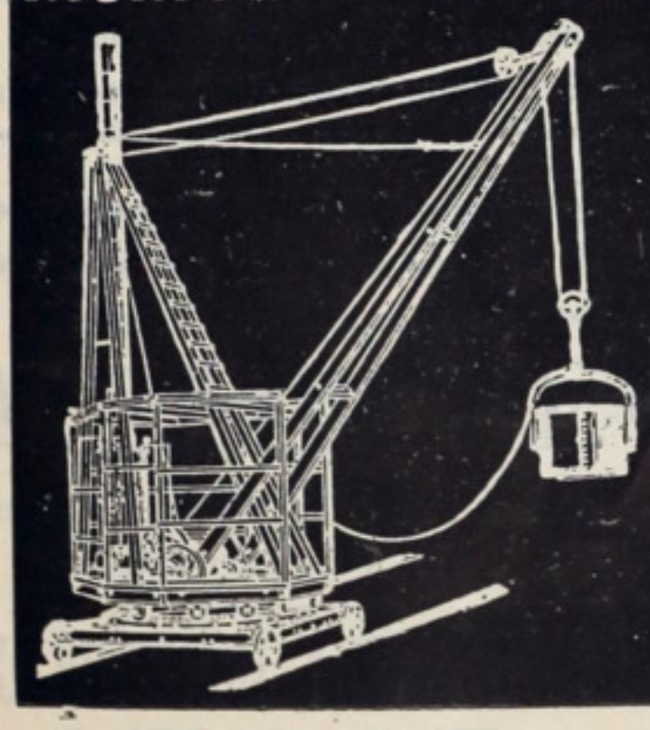

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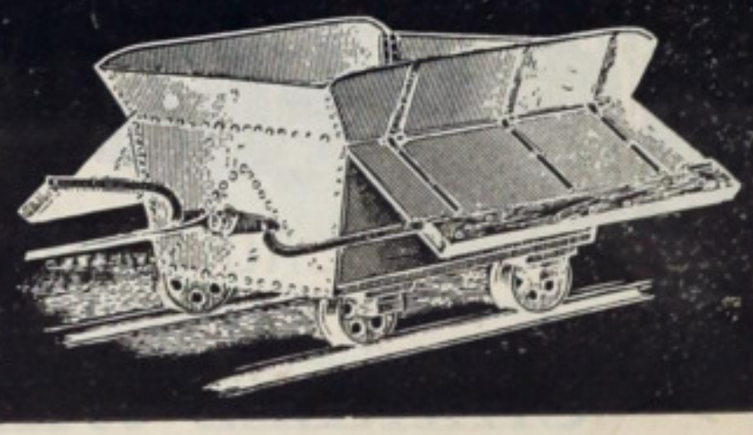

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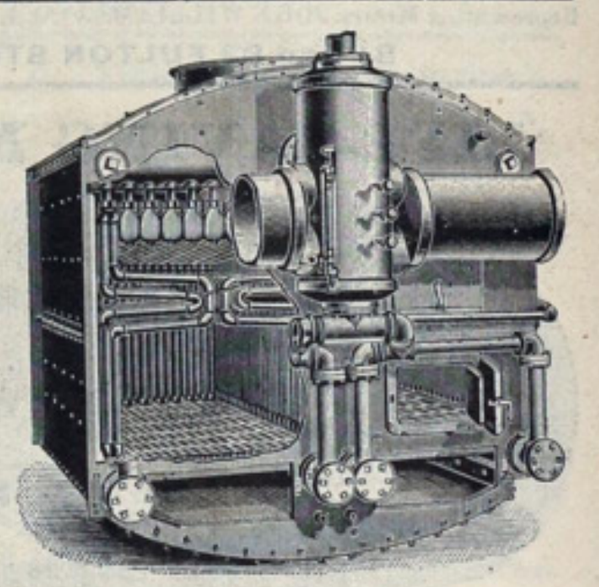

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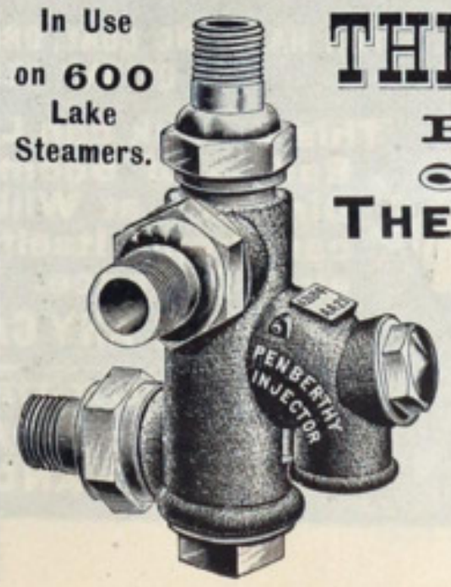

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